CIVIL ENGINEERING

II B.Tech I Semester

(13A01304) BUILDING MATERAIL AND CONSTRUCTION

1 Explain requirements, properties, manufacturing methods of stones and bricks
2 Explain details of materials like tiles, aluminium, gypsum, glass, bitumen
3 Explain details and tests on Lime and cement
4 Explain details of materials like wood, galvanized iron, fiber re-inforced plastics, steel and aluminium
5 Explain various characteristics, classification, construction methods Of brick and stone masonry
6 Design components of various shallow foundations.
7 Explain details of different building components like roof and lintel components
8 Explain various types and materials used in finishing works.

(13A54301) MATHEMATICS-II

1 Apply the concept of real matrices operations in solving in engineering

2 Apply the concept of complex matrices operations in solving in engineering

3 Apply the concept of fourier series for engineering problems

4 Understand the fourier transforms ,fourier sine &cosine transforms and properties

5 Apply the concept of partial differential equations and its applications

6 Understand the concept of solving ordinary differential equations by solving numerical methods

7 Understand the method of least squares to fit a mathematical equation to experimental data

8 Understand and apply the method of numerical solution of ordinary differential equation

(13A01301) STRENGTH OF MATERIALS-I

1. The students would be able to understand the behavior of materials under different stress and strain conditions.

2.The students would be able to draw bending moment, shear force diagram, bending stress and shear stress distribution for beams under the different conditions of loading.

3.The student would be able to apply knowledge to analyse concept of deflection, bending moment and shear force diagram in beams, and columns under various loading conditions using different analysis methods.

(13A99301) ELECTRICAL AND MECHANICAL TECHNOLOGY

1.After going through this course the student gets a thorough knowledge on basics of Electrical Circuits, DC Machines, Transformers, Induction motors & Alternators with which he/she can able to apply the above conceptual things to real-world problems and applications.

2. After going through this course the student gets a thorough knowledge on basics of welding process, turbines, steam engines with which he/she can able to apply the above conceptual things to real-world problems and applications

(13A1302) SURVEYING-I

1.carry out preliminary surveying in the field of civil engineering applications such as structural, highway engineering and geotechnical engineering

2. plan a survey, taking accurate measurements, field booking, plotting and adjustment of traverse

3. use various conventional instruments involved in surveying with respect to utility and precision

4. plan a survey for applications such as road alignment and height of the building undertake measurement and plotting in civil engineering.

(13A01303) FLUID MECHANICS

1.Determine the properties of fluid like pressure and their measurement

2. Compute forces on immersed plane and curved plates

3.Apply continuity equation and energy equation in solving problems on flow through conduits

4.Compute the frictional loss in laminar and turbulent flows

.II B.Tech II Semester

(13A54303) PROBABILITY AND STATITICS

The student will be able to analyze the problems of engineering & industry using the techniques of testing of hypothesis, Statistical Quality Control and Queuing theory and draw appropriate inferences

(13A01401) STRENGTH OF MATERIALS-II

1. Apply the principle of virtual work
2. Determine deflection of a beam for various loading conditions
3. Apply unit load method to find the deflection of truss
4. Determine different stresses developed in thick cylinders
5. Visualize the behaviour of column for combined bending and axial loading

(13A01402) HYDRAULICS & HYDRAULIC MACHENARY

1. Visualize fluid flow phenomena observed in Civil Engineering systems such as flow in a pipe, flow measurement through orifices, mouth pieces, notches and weirs
2. Analyze fluid flows in open channel hydraulics and devices such as weirs and flumes
3. Design open channels for most economical sections like rectangular, trapezoidal and circular sections
4. Measure velocity through instruments in open channel and pipe flow
5. Calculate forces and work done by a jet on fixed or moving plate and curved plates
6. Apply the working principles of Impulse and Reaction turbines
7. Select the type of turbine required with reference to available head of water and discharge
8. Determine the characteristics of centrifugal pump
9. Apply the working principles of the Reciprocating pump

(13A01403) ENVIRONMENATAL SCIENCE

1 Understand the importance of Multidisciplinary nature of environmental studies

2 Classify the natural resources and their importance

3 Understand the concept of Eco system and their classification

4 Interpret the Bio-diversity and its conservation

5 Define the causes and effects of Environmental pollution and solid waste management

6 Explain the Social issues, environment and case studies about the public awareness

7 Understand the role of population growth, family welfare programmes

8 Summarize the field work

(13A01404) STRUCTURAL ANALYSIS-I

1. The student would be able to apply knowledge of various energy theorems.
2. The student would be able to apply knowledge to analyse concept of deflection, bending moment and shear force diagram in beams, and columns under various loading conditions using different analysis methods.

3. The student would be able to apply knowledge on study of slope and deflection of various members with sinking supports also.

(13A01404) SURVEYING-II

1. Carry out advanced surveying techniques in the field of civil engineering applications such as structural, highway engineering and geotechnical engineering
2. Setting out works and carrying out of various curves alignment,
3. Use of various advanced instruments involved in surveying with respect to utility and precision
4. Knowledge on remote sensing elements and their applications.

III B.Tech I Semester
(13A01501) BUILDING PLANNING AND DRAWING

1. Understand the building bye laws & regulations
2. understand the minimum standard requirements and characteristics of residential building
3. Understand the planning concepts of various buildings
4. Understand the concepts of network planning
5. Draw various sign conventions and bonds
6. Draw various doors,windows,ventilators,roofs &trusses
7. Draw sloped & flat roof buildings
8. Draw the plan, section & elevation of the building with the given specifications

(13A01502) DESIGN AND DRAWING OF REINFORCED CONCRETE STRUCTURES

1. Analyse the concepts of reinforced concrete and limit state design
2. IIustrate the material stress strain curves and their safety factors
3. Analyse the concepts of limit state analysis for singly, doubly ,T-beam and L-beam sections

4. Analyse the concepts of limit state analysis and design of section for shear ,torsion ,bond
5. Solve problems for detailing and limit state design for serviceability for deflection, cracking
6. Analyse the fundamental concepts, techniques in analysis and design of reinforced concrete elements
7. Design of various sub structure components and super structure elements

(13A01503) CONCRETE TECHNOLOGY

1. The students will be able to check and recommend different constituent of concrete.
2. The students will be able to test strength and quality of plastic and set concrete.
3. The students will have understanding of application admixture and its effect on properties of concrete.
4. The students will be able to design mix of concrete according to availability of ingredients and design needs.
5. The students will be able to test various strengths of concrete by destructive and non-destructive testing methods.

(13A01504) WATER RESOURCES ENGINEERING-I

1 Compute the average precipitation ,evaporation, evapotranspiration and infiltration
2 Construct Unit Hydrographs and determine design discharges for various structures
3 Understand the basics of Groundwater Hydrology and Well Hydraulics
4 Compute the water requirement of various crops
5 Analyse the concepts, techniques and modernization of Irrigation
6 Design Irrigation Canals using different theories

(13A01505) STRUCTURAL ANALYSIS-II

1 Determine the horizontal thrust, radial shear, bending moment of the three hinged arches
2 Determine the horizontal thrust, radial shear, bending moment of the two hinged arches
3 Analyze single bay single storey portal frames using slope deflection method
4 Analyze single bay single storey portal frames using moment distribution method
5 Analyze single bay single storey portal frames using Kani's method
6 Analyze the continuous beam using flexibility matrix methods
7 Analyze the continuous beam using stability matrix methods
8 Determine the ultimate moment, strength of the fixed and continuous beams using plastic theory of analysis.

(13A01506) ENGINEERING GEOLOGY

1. The students will have the knowledge of principles of engineering geology.
2. The students will have the knowledge of properties of various rocks and minerals
3. The students will be able to judge the suitability of sites for various civil engineering structures.
4. The students will exhibit the ability to use the knowledge of geological strata in the analysis and design the civil engineering structures.
5. The students will have the knowledge for deciding the suitability of water and soil conservation projects.

III B.Tech II Semester

(13A01601) DESIGN AND DRAWING OF STEEL STRUCTURES

1. Apply the IS code of practice for the design of steel structural elements
2. Design compression and tension members using simple and built-up sections
3. Students will be able to explain the behaviour and modes of failure of tension members and different connections.
4. Students will be able to analyze and design tension members, bolted connections, welded connections, compression members and beams.
5. Design welded connections for both axial and eccentric forces

(13A01602) GEO-TECHNICAL ENGINEERING-I

1. Carry out soil classification
2. Solve any practical problems related to soil stresses estimation, permeability and seepage including flow net diagram
3. Estimate the stresses under any system of foundation loads solve practical problems related to consolidation settlement and time rate of settlement

(13A01603) ENVIRONMENTAL ENGINEERING

1. Identify the source of water and water demand
2. Apply the water treatment concept and methods
3. Apply water distribution processes and operation and maintenance of water supply
4. Prepare basic process designs of water and wastewater treatment plants collect, reduce, analyze, and evaluate basic water quality data
5. Determine the sewage characteristics and design various sewage treatment plants
6. Carry out municipal water and wastewater treatment system design and operation
7. Apply environmental treatment technologies and design processes

(13A01604) WATER RESOURCES ENGINEERING-II

1. Design various canal systems
2. Design head and cross regulator structures
3. Identify various types of reservoir and their design aspects
4. By the Establishes the understanding of cross drainage works and its design design different types of dams

(13A01605) TRANSPORTATION ENGINEERING-I

1. Carry out surveys involved in planning and highway alignment
2. Design cross section elements, sight distance, horizontal and vertical alignment
3. Implement traffic studies, traffic regulations and control, and intersection design
4. Determine the characteristics of pavement materials
5. Design flexible and rigid pavements as per irc

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(13A01406) FINITE ELEMENT METHOD IN ENGINEERING

1. Demonstrate the differential equilibrium equations and their relationship
2. Apply numerical methods to FEM
3. Demonstrate the displacement models and load vectors
4. Compute the stiffness matrix for isoperimetric elements
5. Analyze plane stress and plane strain problems

IV B. Tech – I Sem Course Outcomes

(13A52701) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

1.Analyse the concepts of demand analysis for the market products and services with respect to prices

2. Apply concepts of production function in long run and short run production cost for fixing price of the product

3. Apply cost concepts of Break-Even analysis to identify profit earning point

4. Analyse the types of markets and its structures for price output decisions

5. Apply the concepts of capital budgeting techniques to evaluate project's return and feasibility for accepting the projects.

6. Analyse the concepts of double entry system principles in recording the business transactions in the books of accounts

7. Apply the tools and techniques of financial statement analysis to evaluate the financial performance of an organization

(13A01701) ESTIMATION COSTING AND VALUATION

1. Apply different types of estimates in different situations
2. Carry out analysis of rates and bill preparation at different locations
3. Demonstrate the concepts of specification writing
4. Carry out valuation of assets

(13A01702) GEO-TECHNICAL ENGINEERING-II

1. Ability to apply the principle of shear strength and settlement analysis for foundation system.
2. Ability to design shallow and deep foundations
3. Ability to analyze and design earth retaining structures.
4. Estimate bearing capacity using IS code methods

(13A01703) TRANSPORTATION ENGINEERING-II

1. Understand the components of Permanent way and their functions
2. Able to understand the geometric design elements of Railway Track and their design methods
3. Understand the aircraft characteristics and their influence on various design elements
4. Acquire the knowledge of types of Docks, Ports and Harbours

(13A01705) GROUND IMPROVEMENTS TECHNIQUES (CBCC-II)

1. Identify the problems in Expansive soils
2. Implement the stabilization methods
3. Apply grouting and dewatering techniques

(13A01709) REHABILITATION AND RETROFITTING OF STRUCTURES (CBCC-III)

1. Assess strength and materials deficiency in concrete structures
2. Suggest methods and techniques used in repairing / strengthening existing concrete structures
3. Apply Non Destructive Testing techniques to field problems
4. Apply cost effective retrofitting strategies for repairs in buildings